



MONASH University
Accident Research Centre

**KINGBOROUGH SAFER SPEEDS
DEMONSTRATION (KiSS):
EVALUATION REPORT AFTER TWENTY-
FOUR MONTHS**

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(Amended January 2011)

EXECUTIVE SUMMARY

The Kingborough Safer Speeds (KiSS) Demonstration commenced in September 2007, its aim being to implement and evaluate a revised system of rural speed limits based on harm reduction principles. The speed limit changes introduced for the Demonstration were: a reduction from 100km/h to 90km/h on most sealed rural roads and a reduction from 100km/h to 80km/h on gravel roads.

The Monash University Accident Research Centre has conducted the evaluation of the Demonstration, which has occurred at three levels: community knowledge of and attitude to speed limits; drivers' compliance with speed limits; and crash levels. The evaluation was conducted in the Kingborough municipality and in a control municipality, Central Coast. To date, three reports have been prepared: the first describing the Baseline measures obtained in the two municipalities before commencement of the Demonstration; the second describing the impact of the altered speed limits approximately six months after the Demonstration commenced; and the third describing the impact approximately twelve months after the Demonstration commenced. This report describes the impact of the new speeds approximately twenty-four months after the commencement of the Demonstration.

Community survey results collectively indicated that the reduced rural speed limits in Kingborough had a positive and substantial impact upon the local community. For both categories of roads, the large majority of respondents either considered the new reduced limits to be appropriate or preferred further reductions – with this trend being stronger for gravel roads.

Speed measurements have shown a decrease in the proportions of vehicles complying with the new default speed limit relative to compliance with the original limits. However the new speed limits have been associated with slight reductions in the proportion of vehicles travelling at 100km/h or more on sealed roads and 80km/h or more on gravel roads, compared with Baseline measurements. Overall in Kingborough mean free travel speed measurements on sealed roads fell by 0.9 km/h and on gravel roads by 2.4 km/h. In Central Coast mean free travel speed measurements on sealed roads fell by 1.6 km/h.

These findings notwithstanding, given changes in travel speeds in the Central Coast municipality (where speed limits were unchanged), the causal impact of Kingborough's speed limit reductions on travel speeds remains unknown.

While the small crash numbers on gravel roads have effectively remained unchanged, there is indicative evidence that the new speeds on sealed rural roads have been accompanied by fewer casualty crashes and by a reduction in all crashes.

Note: Crash data was updated on 11 January 2011 to clarify results for 'casualty crashes' and 'all crashes' on Kingborough roads.

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1. Background

The following overview of the KiSS Demonstration has been adapted from a document prepared by the Land Transport Safety Policy Branch, Department of Infrastructure, Energy and Resources (DIER), April 2007.

Title:	Kingborough Safer Speeds Demonstration
Objective:	To implement and evaluate a revised system of rural speed limits based on harm reduction principles.
Scope:	<p>The Demonstration will run for a minimum of six months, at which stage an initial review will be conducted. Subject to satisfactory results, the Demonstration will then continue at least for a further six months when it will again be evaluated.</p> <p>The speed reductions to be applied for the period of the Demonstration are:</p> <ul style="list-style-type: none">○ a reduction in the rural default speed limit from 100km/h to 90km/h○ higher standard arterial roads to be sign posted at 100km/h○ a gravel road default of 80km/h (currently 100km/h) <p>The Demonstration commenced in September 2007.</p>

At the time of this report, the reduced speed limits are still in place.

2. Evaluation Procedures

The Monash University Accident Research Centre (MUARC) was contracted to design and evaluate the impact of the Demonstration at three levels:

- community knowledge of and attitude to speed limits;
- drivers' compliance with speed limits; and
- crash frequency and severity.

The evaluation was conducted in the Kingborough municipality and in Central Coast as a control municipality. To date, three reports have been prepared: the first describing the Baseline measures obtained in the two municipalities before commencement of the Demonstration; the second describing the impact of the altered speed limits approximately six months after the Demonstration commenced; and the third describing the impact after approximately twelve months. This report describes the impact approximately twenty-four months after commencement.

2.1 Community knowledge of and attitude to speed limits

The first telephone survey was conducted in the Kingborough and Central Coast municipalities in August 2007 by Enterprise Marketing Research Services (see Attachment 1 for the initial survey format). The survey measured respondents' knowledge of and attitude to prevailing speed limits, with complete data having been obtained from 301 respondents in each municipality. Data from the first survey have been referred to as 'Baseline' data in this report.

Subsequent telephone surveys, modified to reflect the new speed limits in the Kingborough municipality and to include a small number of additional questions, were also conducted by Enterprise Marketing Research Services. The data from the most recent survey, obtained from 300 respondents in each municipality in August 2009, have been referred to as '24-month' data.

2.2 Drivers' compliance with speed limits

Looking specifically at drivers' compliance with speed limits, the two municipal Councils provided speed measurements on non-State Roads and DIER provided measurements on State roads for the Baseline and interim measures. Subsequent measures were provided by DIER for both State and non-State Roads. Baseline speed measurements were conducted between July and August 2007 in the Kingborough municipality and between August and October 2007 in the Central Coast municipality. The measurements for this report were collected between July and September 2009 (Kingborough) and September and October 2009 (Central Coast).

For the purposes of this evaluation, comparisons of free travel speeds have been restricted to the first and most recent sets of measurements, referred to throughout this report as 'Baseline' and '24-month' data respectively.

Sixteen sites were initially selected for speed measurement:

- six sites on sealed roads in the Kingborough municipality, to measure the impact of the changed speed limit from 100km/h to 90 km/h;
- four sites on sealed roads in the Central Coast municipality, which remained unchanged at 100 km/h;
- four sites on gravel roads in the Kingborough municipality, to measure the impact of the changed speed limit from 100km/h to 80 km/h; and
- two sites on gravel roads in the Central Coast municipality, which remained unchanged at 100 km/h.

When speed measurements were collected in February and March 2009 for the 12-month evaluation, data were provided only for fourteen of the initial sixteen sites. With data from a further site omitted due to concerns about their quality, analyses have since been restricted to the following thirteen sites:

- five sites on sealed roads in the Kingborough municipality;
- four sites on sealed roads in the Central Coast municipality; and
- four sites on gravel roads in the Kingborough municipality.

Speed measurements taken from individual road sites have been combined to produce composite speed measurements for sealed roads in the Kingborough and Central Coast municipalities and for gravel roads in the Kingborough municipality. For this report only, the composite speed measurements obtained twenty-four months after the commencement for the Demonstration have been weighted to represent the extent to which the individual site measurements contributed to the composite measurements for each appropriate road category for the 'Baseline' period.

Subsequent measurements have been compared for the 'Baseline' and '24-month' periods to identify possible changes in vehicle speeds and speed distributions per category of road. However comparisons of composite measurements must be treated with caution, at least for the following reasons:

- the 'Baseline' and '24-month' speed measurements were obtained at different dates of the year;
- the different sites per road category may not be sufficiently homogeneous to justify collapsing into general categories; and
- no account has been taken of changes in other conditions across the two periods (for example, changes to road conditions).

All speed measurements have been accepted at face value.

All changes in speed measurements from the Baseline to 24-month period have been tested for statistical significance. However, given the high numbers of measurements per individual site, even very small magnitudes of difference were statistically significant. Unless indicated otherwise, all differences discussed in Section 4 were statistically significant.

2.3 Crash levels

For this report and for each municipality, two sets of crash data were used:

- for the three calendar years 2004-06, referred to as 'Baseline' data in the report.;
- for the twelve-month period October 2008 – September 2009, referred to as '24-month' data in the report.

Crash data were provided by DIER.

Given the small crash numbers in both municipalities, it was decided to use a three-year 'Baseline' period to increase the possibility of discerning statistically significant changes associated with the Demonstration. However, to facilitate direct comparison between the two crash sets, the 'Baseline' crash levels have been shown as annual averages for the period 2004-06. All testing for statistical significance has been based on crash frequencies rather than annual averages.

3. Purpose of this Report

This report assesses the extent of change approximately twenty-four months after the start of the Demonstration in relation to:

- community acceptance of the new limits,
- compliance with the new Kingborough speed limits, based on changes in free travel speeds and
- the extent of change in crash levels

4. Results

4.1 Community acceptance of speed changes

A detailed analysis of the ‘Baseline’ and ‘24-month’ surveys of respondents’ knowledge of and attitudes towards speed limits changes, is given in Attachment 2.

Considering the reduction from 100 km/h to 80 km/h on gravel roads in Kingborough:

- following the changed speed limit, 51.0 percent (‘24-month’ survey) of the community were able to nominate the correct limit, compared to only 16.6 percent when the limit was 100 km/h. In other words, the change in the speed limit was associated with increased awareness of the correct speed limit – an increase which was statistically significant;
- the changed speed limit was strongly supported by the Kingborough community – with 53.0 percent (‘24-month’ survey) considering 80 km/h to be appropriate, compared to 11.6 percent who previously regarded the 100 km/h limit as appropriate – with the increase being statistically significant;
- as further evidence of support, over 95 percent of all respondents in the ‘24-month’ survey believed that the prevailing limit should be 80 km/h or lower.

Considering the reduction from 100 km/h to 90 km/h on most sealed rural roads in Kingborough:

- following the changed speed limit, 54.0 percent (‘24-month’ survey) of the community were able to nominate the correct limit, compared to 54.8 percent when the limit was 100 km/h. In other words, the change in the speed limit was associated with a constant awareness of the correct speed limit;
- the changed speed limit was supported by the Kingborough community – with 64.3 percent (‘24-month’ survey) considering 90 km/h to be appropriate, compared to 53.2 percent who previously regarded the 100 km/h limit as appropriate. However when related to trends in the Central Coast community, this increase was not statistically significant;

These findings collectively indicate that the introduction of reduced rural speed limits in the Kingborough municipality had substantial support from the local community over the first twenty-four months of the Demonstration. For both categories of roads, the large majority of respondents either considered the new reduced limits to be appropriate or preferred further reductions – with this trend being stronger for gravel roads.

4.2 Changes in mean free travel speeds

Table 1 shows for each site, the Baseline and 24-month mean free travel speeds for the different road categories and municipalities.

TABLE 1: Mean free travel speeds at the thirteen sites for the Baseline and 24-month periods.

Location no	Mean free travel speeds			Standard deviation		No. of vehicles	
	Base-line	24-month	% Change	Base-line	24-month	Base-line	24-month
Sealed roads - Kingborough							
1.00	96.4	92.6	-4%	9.8	9.3	19793	69871
2.00	51.8	62.9	21%	13.2	11.2	3391	6222
4.00	84.0	81.8	-3%	8.3	7.7	37179	31301
5.00	73.0	74.1	2%	7.3	7.4	26496	30834
6.00	75.7	76.9	2%	11.6	11.0	1682	1727

<i>S/total</i>	82.1	81.2	-1.1%	-	-	88541	139955
	Sealed roads – Central Coast						
13.00	83.8	82.0	-2%	16.0	16.3	2979	4843
14.00	77.7	77.2	-1%	11.0	11.2	2290	3778
15.00	64.5	61.4	-5%	17.1	15.2	309	1814
16.00	91.8	89.5	-3%	15.9	13.6	1602	7659
<i>S/total</i>	82.8	81.2	-1.9%	-	-	7180	18094
	Gravel roads – Kingborough						
7.00	76.9	74.7	-3%	14.7	14.5	1911	2316
8.00	65.7	63.2	-4%	13.2	12.8	278	384
9.00	72.7	71.3	-2%	12.3	11.0	1896	2064
10.00	55.5	50.1	-10%	14.9	13.2	990	2833
<i>S/total</i>	70.6	68.2	-3.4%	-	-	5075	7597

NOTE: 'Free travel speed' has been based on a headway of 5.0 seconds or greater. Speed measurements pertain to travel in either direction at the specified sites. '% change' is the change in the 24-month mean travel speed, expressed as a proportion of the Baseline mean travel speed. A negative % change indicates a reduced speed over the course of the Demonstration.

Considering the changes in mean free travel speeds at sites on sealed roads after twenty-four months:

- in the Kingborough municipality, three of the five sites showed increases in mean free travel speeds while two sites showed reductions. Except for one site, changes in mean free travel speeds between the 'Baseline' and '24-month' periods amounted to only a few percentage points. Only one site (Location 2) showed a substantial change, an increase of 21 percent¹. Overall, there was a 0.9 km reduction in the mean free travel speed; and
- in the Central coast municipality, all four sites showed a reduction in mean free travel speeds, with an overall fall of 1.6 km.

Considering changes in mean free travel speeds at sites on gravel roads:

- in the Kingborough municipality, all four sites showed reductions in mean travel speeds from the Baseline to 24-month measurements. For all sites combined, the reduction was 2.4 km over the period;
- no reliable measurements were available from sites on gravel roads in the Central coast municipality.

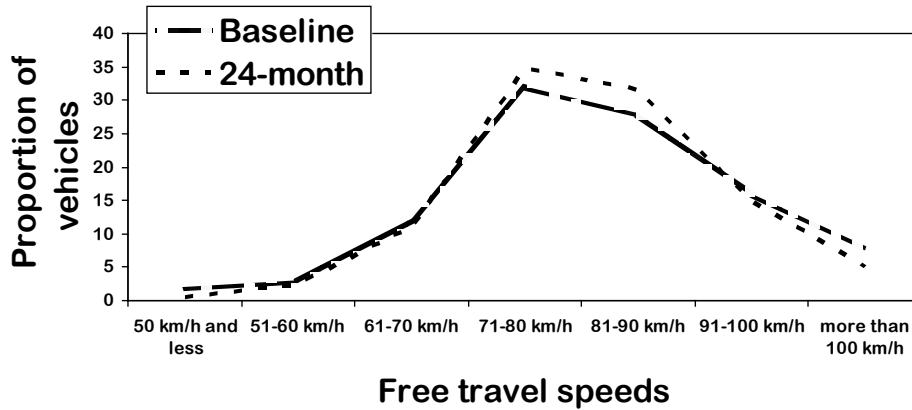
For both road types in Kingborough and for sealed roads in the Central Coast, the mean free travel speeds were well below the posted or default speed limits for both the Baseline and 24-month measurements.

4.3 Changes in free travel speed distributions

Figure 1 shows the Baseline and 24-month distributions of free travel speeds on sealed roads in the Kingborough municipality.

¹ It is unlikely that the increase is due to the reduced speed limit. Possible explanatory factors range from inconsistencies in the collection of speed measurements to changes in road and traffic conditions. Given the relative small traffic volumes in both measurement periods, this location has had only a minimal impact on any composite measurements for this road category.

Figure 1: Baseline and 24-month sealed roads, Kingborough

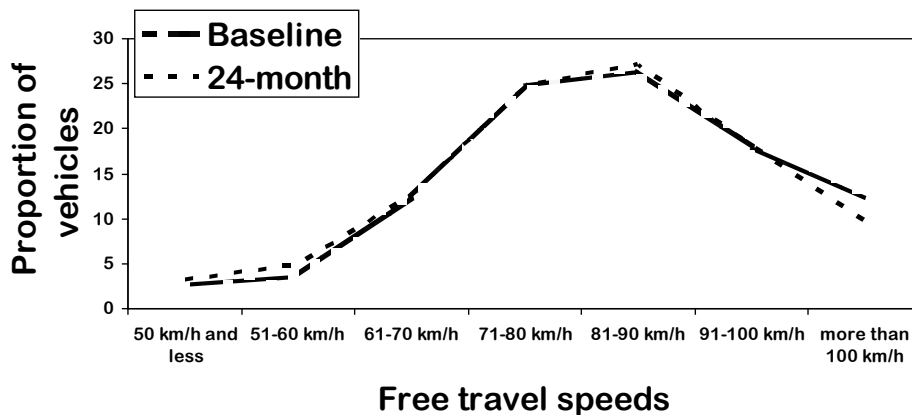


The extent of compliance with the posted speed on sealed roads in Kingborough fell from 91 percent in the Baseline period (when the speed limit was 100 km/h) to 80 percent after approximately twenty-four months (when the speed limit was 90 km/h).

The reduced speed limit was also accompanied by a slight change in the overall speed distribution at the highest speeds. The proportion of vehicles travelling above 100 km/h fell slightly from 8 percent in the 'Baseline' period to 5 percent in the '24-month' period.

Figure 2 shows the Baseline and 24-month distributions of free travel speeds on sealed roads in the Central Coast municipality.

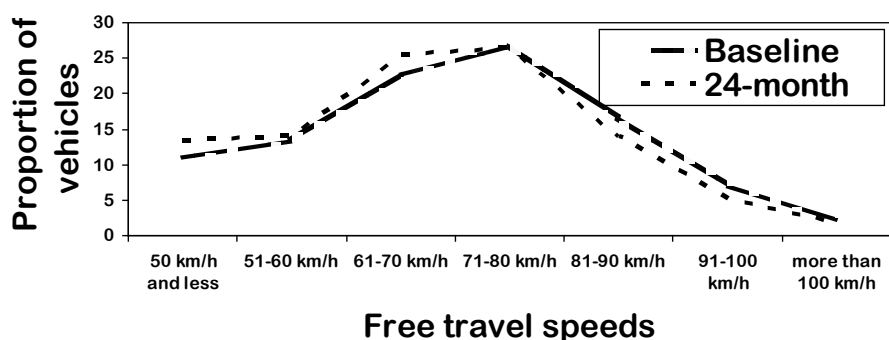
Figure 2: Baseline and 24-month sealed roads, Central Coast



Compliance with the posted speed limit which was 100 km/h over the period was effectively constant at just under 90%. However there was a small change in the overall free travel speed distributions, with the proportion of vehicles travelling above 100 km/h falling from 12 to 10 percent.

Figure 3 shows the Baseline and 24-month distributions of free travel speeds on gravel roads in the Kingborough municipality.

Figure 3: Baseline and 24-month free travel speeds on gravel roads, Kingborough



The extent of compliance with the default speed on gravel roads in Kingborough fell from 98 percent in the Baseline period (when the speed limit was 100 km/h) to 79 percent after approximately twenty-four months (when the speed limit was 80 km/h).

The changed speed limit on gravel roads in Kingborough was also accompanied by a slight change in the overall speed distribution. The proportions of vehicles travelling in all speed categories above 80 km/h fell from 26 percent in the Baseline period to 21 percent in the 24-month period.

Free travel speed data for gravel roads in the Central Coast were unavailable

4.4 Changes in proportions of vehicles with free travel speeds

Table 2 shows the proportions of vehicles with free travel speeds when Baseline and 24-month measurements were taken at the 13 sites in the two municipalities.

TABLE 2: Proportion of vehicles with free travel speeds at the thirteen sites measured for the Baseline and 24-month periods.

Location no.	% vehicles travelling freely		No. all vehicles	
	Baseline	24-month	Baseline	24-month
Sealed roads - Kingborough				
1.00	78	65	25465	108295
2.00	96	96	3546	6452
4.00	45	43	82699	73102
5.00	64	64	41605	48225
6.00	96	97	1756	1773
Sealed roads - Central coast				
13.00	95	94	3139	5160
14.00	96	95	2400	3993
15.00	98	96	316	1895
16.00	90	91	1782	8460
Gravel roads - Kingborough				
7.00	86	83	2236	2774
8.00	99	97	280	394
9.00	83	80	2298	2571

10.00	98	98	1007	2880
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NOTE: 'Free travel speed' has been based on a headway of 5.0 seconds or greater.
Speed measurements pertain to travel in either direction at the specified sites.

With one exception², all sites showed only minor differences in the proportion of vehicles with free travel speeds across the two years – differences usually being only one or two percentage points. The evidence suggests that that the reduced speed limits in the Kingborough municipality were not associated with fewer drivers able to choose their travel speeds.

4.5 Safety benefits of the changed speed limits

'Baseline' and '24-month' crash numbers per road type for both municipalities, are presented in Table 3.

Table 3: 'Baseline' and '24-month' crash numbers for the Kingborough and Central Coast municipalities on (a) gravel roads and (b) sealed rural roads, 2004-06 and 2008-09.

Kingborough			Central Coast		
Speed zone	Casualty crashes only	All crashes	Speed zone	Casualty crashes only	All crashes
Gravel roads					
'Baseline': 100 km/h, 2004-06	2	12	100 km/h, 2004-06	1	2
'24-month': 80 km/h, Oct 2008 – Sep 2009	2	13	100 km/h, Oct 2008 – Sep 2009	0	2
Sealed rural roads					
'Baseline': 100 km/h, 2004-06	8	27	100 km/h, 2004-06	15	30
'24-month': 90 km/h, Oct 2008 – Sep 2009	2	13	100 km/h, Oct 2008– Sep 2009	8	26

Source: provided by DIER at 20 December 2010.

Note: 'Baseline' crash numbers for sealed roads in the Kingborough municipality exclude crashes on roads which remained at 100 km/h.

'Baseline' crash numbers have been expressed as rounded annual averages.

Considering gravel roads and compared to the 'Baseline' crash numbers, Kingborough's crash numbers effectively remained constant for the second twelve months of the Demonstration. This was true for both casualty crashes and all crashes. This constancy was also true for the Central Coast municipality.

Considering sealed roads and compared to the 'Baseline' crash numbers, Kingborough's crash numbers fell during the second twelve-month period to substantially greater extents than experienced in the Central Coast municipality. Casualty and all crashes in Kingborough fell by 75 percent and 52 percent respectively, compared to Central Coast's falls of 47

² Only one site (Location 1, Kingborough) showed a substantial reduction in the proportion of vehicles with free travel speeds. A change of this magnitude suggests that factors other than the reduced speed limit were operating.

percent and 13 percent respectively. However these reductions were not statistically significant.

5. Summary

The KiSS Demonstration commenced in September 2007, with speeds on gravel roads reduced from 100 km/h to 80km/h and speeds on most sealed rural roads reduced from 100 km/h to 90km/h. ‘Baseline’ measurements were obtained in both Kingborough and a control municipality, Central Coast, to assess possible changes in community knowledge of and attitude to speed limits, drivers’ compliance with set speed limits and crash levels. Equivalent measurements were also obtained for both municipalities approximately twenty-four months after the commencement of the Demonstration.

Community survey results collectively indicated that the reduced rural speed limits in Kingborough had a positive and substantial impact upon the local community. For both categories of roads, the large majority of respondents either considered the new reduced limits to be appropriate or preferred further reductions – with this trend being stronger for gravel roads.

Speed measurements approximately twenty-four months after the Demonstration commenced have shown a decrease in the proportions of vehicles complying with the new default speed limit. However, the new speed limits have been associated with slight reductions in the proportion of vehicles travelling at 100km/h or more on sealed roads and 80km/h or more on gravel roads, compared with Baseline measurements. Overall in Kingborough mean free travel speed measurements on sealed roads fell by 0.9 km/h and on gravel roads by 2.4 km/h. In Central Coast mean free travel speed measurements on sealed roads fell by 1.6 km/h.

These findings notwithstanding, given changes in travel speeds in the Central Coast municipality where speed limit was unchanged, the causal impact of Kingborough’s speed reductions on travel speeds remains unknown.

While the small crash numbers on gravel roads have effectively remained unchanged, there is indicative evidence that the new speeds on sealed rural roads have been accompanied by fewer casualty crashes and by a reduction in all crashes.

ATTACHMENT 1: 'Baseline' Survey Form, August 2007

1. Interview Number	2. Interviewer	3. Phone Number
4. Municipality 1. Kingborough 2. Central Coast	5. Town/Suburb	6. Gender 1. Male 2. Female
7. First name		

Good Afternoon, evening

This is ... from the research company EMRS ringing on behalf of the Department of Infrastructure, Energy and Resources. The Department is seeking to gather information about the knowledge and the views of people in your Council area about road speed limits.

Are you a current car driver and if so would you be willing to help me by answering 4 or 5 questions?

IF THE RESPONDENT IS NOT A DRIVER ASK IF THERE IS SOMEONE ELSE IN THE HOUSE AT THE MOMENT WHO COULD HELP.

IF THERE IS NO DRIVER ABLE TO HELP TERMINATE WITH THANKS.

1. Approximately how many years have you been driving?	1. Less than 5 years 2. 5 years but less than 10 3. 10 years but less than 15 4. 15 years but less than 20 5. 20 years but less than 25 6. 25 years but less than 30 7. 30 years but less than 40 8. 40 years but less than 50 9. 50 years but less than 60 10. 60 years or more 11. Unsure PROBE
2. What is the current maximum speed limit on sealed rural roads in your municipality?	1. Don't know 2. 110 km/h 3. 100 km/h 4. 90 km/h 5. 80 km/h 6. Unsure 7. Other (specify)
2A Other	RECORD VERBATIM
3. To the best of your knowledge, has this maximum speed limit been changed within the last 12 months.	1. Yes 2. No 3. Unsure

4. What is the current maximum speed limit on gravel roads in your municipality?	1. Don't know 2. 110 km/h 3. 100 km/h 4. 90 km/h 5. 80 km/h 6. Unsure 7. Other (specify)
4A Other	RECORD VERBATIM
5. To the best of your knowledge, has this maximum speed limit on gravel roads been changed within the last 12 months?	1. Yes 2. No 3. Unsure
6. The current speed limit on most sealed rural roads in your council area is 100km/h?	

Do you think this is an appropriate speed limit?	1. Yes 2. No 3. Unsure
7. What makes you say that?	RECORD VERBATIM PROBE FOR THE REASONS
8. The current speed limit on most gravel roads in your council area is 100 km/h?	
Do you think this is an appropriate speed limit?	1. Yes 2. No 3. Unsure
9. What makes you say that?	RECORD VERBATIM PROBE FOR THE REASONS
10. Do you live within 3 kms of a post office?	1. Yes 2. No 3. Unsure
11. Are you...	1. 18 to 24 years 2. 25 to 34 years 3. 35 to 44 years 4. 45 to 54 years 5. 55 to 69 years 6. 70 years or over
12. Which of the following best describes your household?	1. Single, never married 2. A couple with no children 3. Family, no children over 16 4. Family, children over 16 at home 5. Married, no children at home 6. Widowed 7. Sole parent 8. Separated or divorced
13. Would you describe yourself as being..	1. Employed full time or self employed 2. Employed on a part time basis 3. Engaged in home duties 4. Retired or on a pension 5. Unemployed 6. A student

Thank you for helping us with the Survey, which has been conducted for the Department of Infrastructure, Energy and Resources. Just to remind you than my name is Jane from the research firm EMRS. EMRS is bound by national privacy legislation that respects the rights of all respondents. If you have any questions about this survey please ring my supervisor on 62 111 222.

I certify that this interview has been complete fully and accurately according to the ESOMAR Code of Professional Conduct.

.....INTERVIEWER.....DATE

.....TIME COMPLETED.....TOTAL TIME (MINS)

This survey with appropriate modifications to reflect the changed speed limits in the Kingborough municipality, was repeated in April 2008. Following further minor modifications, it was repeated in October 2008.

ATTACHMENT 2: Report on the ‘Baseline’ and ‘24-month’ Community Surveys

1. Knowledge of, attitude towards speed limits on gravel roads

- Knowledge of the current limit

What is the current maximum speed limit on gravel roads in your municipality?			Baseline survey	24-month survey
Kingborough	100 km/h	Count	50	3
		%	16.6%	1.0%
	90 km/h	Count	1	23
		%	0.3%	7.7%
	80 km/h	Count	56	153
		%	18.6%	51.0%
	Other	Count	58	83
		%	19.3%	27.7%
	Unsure, Do not know	Count	136	38
		%	45.2%	12.7%
TOTAL	Count	301	300	
	%	100.0%	100.0%	
Central Coast	110 km/h	Count	7	11
		%	2.3%	3.7%
	100 km/h	Count	39	38
		%	13.0%	12.7%
	90 km/h	Count	2	5
		%	0.7%	1.7%
	80 km/h	Count	69	82
		%	22.9%	27.3%
	Other	Count	36	63
		%	12.0%	21.0%
	Unsure, Do not know	Count	148	101
		%	49.2%	33.7%
	TOTAL	Count	301	300
		%	100.0%	300.0%

Comment:

In Kingborough, before the commencement of the Demonstration, 16.6 percent of respondents were able to correctly nominate that the speed limit on gravel roads was 100 km/h. Twenty-four months after the introduction of the new speed limit, 51.0 percent of respondents were aware that the speed limit had been lowered to 80 km/h. In Central Coast, where there had been no change to the limit, the proportion that correctly reported that the limit was 100 km/h fell slightly from an initial 13.0 to 12.7 percent after twenty-four months.

The new speed limit in Kingborough was associated with an overall reduction in the proportion of respondents who were unsure of the speed limit – falling from an initial 45.2 percent to 12.7 percent after twenty-four months. In Central Coast, the proportion of respondents who were unsure of the speed limit was 49.2 percent for the ‘Baseline’ survey and 33.7 percent for the ‘24-month’ survey.

Testing for statistical significance.

Relative to the Central Coast Municipality, after twenty-four months more respondents in Kingborough were able to correctly identify the speed limit on gravel roads and the difference was statistically significant (Odds ratio=3.14, 95%CI 1.75-5.65).

• **Attitude towards the current limit**

The current speed limit on most gravel roads in your council area is 100 km/h/80 km/h. Do you think this is an appropriate speed limit?			Baseline survey	24-month survey
Kingborough	Yes	Count	35	159
		%	11.6%	53.0%
	No	Count	258	116
		%	85.7%	38.7%
	Unsure	Count	8	25
		%	2.7%	8.3%
TOTAL	Count	301	300	
	%	100.0%	100.0%	
Central Coast	Yes	Count	38	54
		%	12.6%	18.0%
	No	Count	255	232
		%	84.7%	77.3%
	Unsure	Count	8	14
		%	2.7%	4.7%
TOTAL	Count	301	300	
	%	100.0%	100.0%	

Comment:

When informed that the speed limit on gravel roads was 100 km/h, 11.6 percent of Kingborough respondents in the ‘Baseline’ survey believed that this was an appropriate speed. Following the reduction to 80 km/h, 53.0 percent of respondents after twenty-four months considered the new speed to be appropriate. Conversely, 85.7 percent of respondents in the ‘Baseline’ survey believed 100 km/h to be inappropriate, compared to 38.7 percent who believed 80 km/h to be inappropriate (‘24-month’ survey).

In Central Coast, 12.6 percent and 18.0 percent of respondents believed 100 km/h to be appropriate and conversely, 84.7 percent and 77.3 percent believed it to be inappropriate (‘Baseline’ and ‘24-month’ surveys, respectively).

In the ‘24-month’ survey, respondents who considered the prevailing speed limit to be inappropriate were also asked whether the limit should be higher or lower. Very consistent findings were found in both municipalities: in all instances, over 95 percent of respondents who considered the prevailing limit to be inappropriate reported that it should be lower.

Considering the overall levels of support for the changed speed limit on gravel roads in Kingborough, after twenty-four months 90.3 percent of all respondents believed that the speed limit should be 80 km/h or lower, strongly suggesting that the change had widespread community support.

Testing for statistical significance.

Relative to the Central Coast Municipality, more respondents in Kingborough after twenty-four months considered the prevailing speed limit on gravel roads to be appropriate and the difference was statistically significant (Odds ratio=3.20, 95% CI 1.77-5.78).

2. Knowledge of, attitude towards speed limits on sealed rural roads

• Knowledge of the current limit

What is the current maximum speed limit on sealed rural roads in your municipality?			Baseline survey	24-month survey
Kingborough	110 km/h	Count	3	2
		%	1.0%	0.7%
	100 km/h	Count	165	28
		%	54.8%	9.3%
	90 km/h	Count	4	162
		%	1.3%	54.0%
	80 km/h	Count	54	37
		%	17.9%	12.3%
	Other	Count	67	63
		%	22.3%	21.0%
Unsure	Count	8	8	
	%	2.7%	2.7%	
TOTAL	Count	301	300	
	%	100.0%	100.0%	
Central Coast	110 km/h	Count	39	44
		%	13.0%	14.7%
	100 km/h	Count	158	156
		%	52.5%	52.0%
	90 km/h	Count	3	7
		%	1.0%	2.3%
	80 km/h	Count	54	42
		%	17.9%	14.0%
	Other	Count	37	43
		%	12.3%	14.3%
	Unsure	Count	10	8
		%	3.3%	2.7%
	TOTAL	Count	301	300
		%	100.0%	100.0%

Comment:

In Kingborough, before the commencement of the Demonstration, 54.8 percent of respondents were able to correctly nominate that the speed limit on most rural roads was 100 km/h. Twenty-four months after the introduction of the new speed limit, 54.0 percent of respondents were aware that the speed limit had been lowered to 90 km/h. In Central Coast where there had been no change to the limit, the proportions correctly reporting that the limit was 100 km/h were 52.5 percent and 52.0 percent ('Baseline' and '24-hour' surveys respectively).

The new speed limit in Kingborough saw no change in the proportion of respondents who were unsure of the speed limit after twenty-four months, the proportion being constant at 2.7 percent. In Central Coast, the proportions of respondents who were unsure of the speed limit were also reasonably constant– 3.3 percent and 2.7 percent for the ‘Baseline’ and ‘24-month’ surveys respectively.

Testing for statistical significance.

Relative to the Central Coast Municipality, there was no change in the proportion of Kingborough residents who were able to correctly identify the speed limit on most rural roads twenty-four months after the reduction from 100 km/h to 90 km/h.

- **Attitude towards the current limit**

The current speed limit on most rural roads in your council area is 100 km/h/90 km/h. Do you think this is an appropriate speed limit?			Baseline survey	24-month survey
Kingborough	Yes	Count	160	193
		%	53.2%	64.3%
	No	Count	115	87
		%	38.2%	29.0%
	Unsure	Count	26	20
		%	8.6%	6.7%
	TOTAL	Count	301	300
		%	100.0%	100.0%
Central Coast	Yes	Count	152	182
		%	50.5%	60.7%
	No	Count	125	96
		%	41.5%	32.0%
	Unsure	Count	24	22
		%	8.0%	7.3%
	TOTAL	Count	301	300
		%	100.0%	100.0%

Comment:

When informed that the speed limit on most rural roads was 100 km/h, 53.2 percent of Kingborough respondents in the ‘Baseline’ survey believed this to be an appropriate speed. Following the reduction, 64.3 percent of respondents in the ‘24-month’ survey believed that 90 km/h was an appropriate speed. Conversely, 38.2 percent of respondents in the ‘Baseline’ survey believed 100 km/h to be inappropriate, compared to 29.0 percent who believed 90 km/h to be inappropriate (‘24-month’ survey).

In Central Coast, 50.5 percent and 60.7 percent of respondents believed 100 km/h to be appropriate and conversely, 41.5 percent and 32.0 percent believed it to be inappropriate (‘Baseline’ and ‘24-month’ surveys, respectively).

In the ‘24-month’ surveys, respondents who considered the prevailing speed limit to be inappropriate were also asked whether the limit should be higher or lower. In both Kingborough and Central Coast, the majority of respondents who considered the prevailing limit to be inappropriate reported that it should be lower. The proportions were 72.4 percent and 93.8 percent (Kingborough and Central Coast respectively).

Considering the overall levels of support for the changed speed limit on most sealed rural roads in Kingborough after twenty-four months, 85.3 percent of all respondents believed that the speed limit should be 90 km/h or lower, strongly suggesting that the change had widespread community support. This level of support was consistent with the support received twelve months after the start of the Demonstration.

Testing for statistical significance.

Relative to the Central Coast Municipality, there was no change in the proportion of Kingborough residents after twenty-four months who considered the prevailing speed limit on most rural roads to be appropriate.

3. Conclusions

Considering the reduction from 100 km/h to 80 km/h on gravel roads in Kingborough:

- 51.0 percent ('24-month' survey) of the community were able to nominate the correct limit, compared to only 16.6 percent when the limit was 100 km/h. In other words, the change in the speed limit was associated with increased awareness of the correct speed limit – an increase which was statistically significant;
- the changed speed limit was strongly supported by the Kingborough community – with 53.0 percent ('24-month' survey) considering 80 km/h to be appropriate, compared to 11.6 percent who previously regarded the 100 km/h limit as appropriate – with the increase being statistically significant;
- as further evidence of support, over 95 percent of all respondents in the '24-month' survey believed that the prevailing limit should be 80 km/h or lower.

Considering the reduction from 100 km/h to 90 km/h on most sealed rural roads in Kingborough:

- 54.0 percent ('24-month' survey) of the community were able to nominate the correct limit, compared to 54.8 percent when the limit was 100 km/h. In other words, the change in the speed limit was associated with a constant awareness of the correct speed limit;
- the changed speed limit was supported by the Kingborough community – with 64.3 percent ('24-month' survey) considering 90 km/h to be appropriate, compared to 53.2 percent who previously regarded the 100 km/h limit as appropriate. However when related to trends in the Central Coast community, this increase was not statistically significant;
- as further evidence of support, 85.3 percent of all respondents in the '24-month' survey believed that the prevailing limit should be 90 km/h or lower.

These findings collectively indicate that the introduction of reduced rural speed limits in the Kingborough municipality had substantial support from the local community over the first twenty-four months of the Demonstration. For both categories of roads, the large majority of respondents either considered the new reduced limits to be appropriate or preferred further reductions – with this trend being stronger for gravel roads.